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The train goes 'choo choo'

Citation for published version:

Skarabela, B, Pool, E & Ota, M 2018, 'The train goes 'choo choo': A corpus analysis of onomatopoeic words in child-directed speech and early production' BUCLD 43, 2/11/18 - 4/11/18, .

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The train goes ‘choo-choo’: A corpus analysis of onomatopoeic words in child-directed speech and early production

ONOMATOPOEIC WORDS (OWs)

- Words like *woof* and *choo-choo* with phonological forms that resemble sounds and objects in the real world.
- A common feature of child-directed speech across different languages.

What role do OWs play in early language development?

Sound-symbolism bootstrapping hypothesis: The non-arbitrary nature of OWs provides infants with referential insight into sound-meaning mappings in words (Imai & Kita, 2014).

Easier articulation: The phonological characteristics of OWs, including the limited inventory of sounds, articulatorily easier segments, and less complex syllables, may facilitate the initial stages of children's word production (Laing, 2014; Massaro & Perlman, 2017).

- Do OWs provide referential insight in real-life language learning? Are they used in contexts where word-referent mappings can be made transparent?
- Do infants preferentially produce OWs above and beyond their frequencies in the input?

METHOD

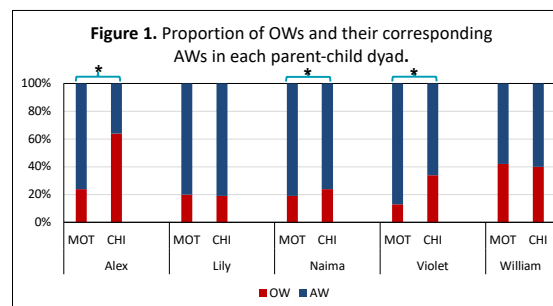
Data. Five typically developing children and their mothers from the Providence Corpus (Demuth, Culbertson & Alter, 2006).

CHILD NAME	AGE RANGE	Total No. of Words (MOT)	Total No. of Words (CHI)
Alex	01;04;27-01;11;27	38,387	3,769
Lily	01;01;02-01;11;26	107,659	6,703
Naima	01;00;14-01;11;26	152,092	36,434
Violet	01;02;00-01;11;28	43,308	3,326
William	01;04;12-01;11;15	47,200	4,650

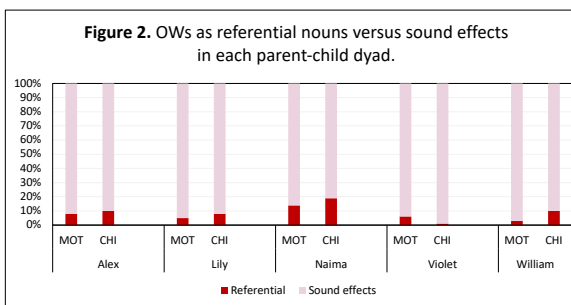
Data Extraction and Coding. All lexical variants of 22 conventional OWs and corresponding Adult words (AWs) from the MacArthur-Bates CDI:

- Each item was coded as either OW (e.g., *woof*) or AW (e.g., *dog*).
- Each OW was examined in the context of the utterance and further coded as referential expression or sound effect (a la Laing, 2014).

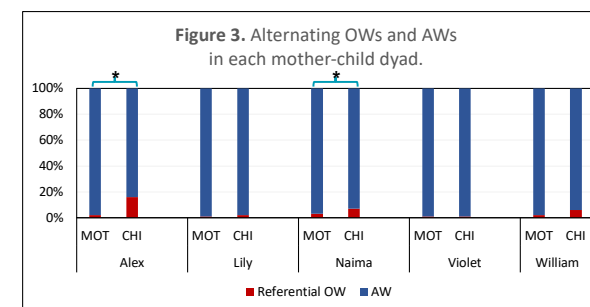
RESULTS



- OWs represented less than 1% of the adult input and less than 2% of the children's production (see also Ota & Skarabela, 2016; Laing et al., 2017; and Ota et al., 2018).
- All children except Alex produced more AWs than OWs.
- Three of the five children used OWs at higher rates than their mothers.



- However, both mothers and children used OWs as **sound effects** in the vast majority of cases (88% and 93% on average for children and mothers respectively).
- In these contexts, there are **no alternative adult forms**. Children, therefore, had no choice but select the OW.



- In referential contexts where either OWs or AWs were available (e.g., *'There is a choo-choo/train'*), the children overwhelmingly chose to produce the AWs.
- While some children had a higher proportion of OWs than their mothers, both children and mothers overwhelmingly used AWs (96% and 98% respectively).

CONCLUSIONS

- When they have a choice to represent referents with either OW or AW, children, like adults, use AWs most of the time.
- No direct evidence that OWs provide an articulatory easier alternative to learners.
- In real-life language learning, OWs may not provide referential insights to canonical lexical sound-meaning mappings. They are primarily used as sound effects, whose role in word learning is still poorly understood.

Adult words (AWs) vs Onomatopoeic words (OWs)

(bear/roar), (bird/birdie/tweet), (bumble bee/buzz), (car/rooom), (cat/kitty/kitty cat/meow), (chicken/chick/cheep), (cow/moo), (dog/doggy/puppy/woof), (lion/roar), (horse/horse/hee haw!), (duck/duckie/duck), (frog/froggy/fribbit), (car/beep), (horn/horn/hoorn), (horse/horse/ neigh), (lion/roar), (mouse/squeak), (owl/hoo), (pig/piggy/piglet/oink), (rooster/cock a doodle doo), (sheep/baa), (train/choo)

¹ Some OWs could be repeated (e.g., choo, choo-choo, choo-choo-choo)
² Items used as sound effects only

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